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too much ascribed to ☿ as a prevention &c

An
Essay
on
Hydrophobia
by
Joseph Warren
South Carolina

Passed March 10th 1824
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Hydrophobia

In writing the following sheets, I regret much my inability to offer any thing new or interesting; more especially on a disease that is so little understood and about which physicians differ so widely both as regards its pathology and treatment. I am well aware that many able and distinguished writers have attempted to explain its nature, but they certainly have fallen far shot of being satisfactory and it will not be expected that I can offer any thing new with regard to it, but I shall satisfy myself merely by giving a few of the most generally recieved opinions.

Hydrophobia fatunately is not of frequent occurence in the united states, but it is a disease which the practitioner has occasionally

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to witness, although almost destitute of the hope of effecting a cure and oftentimes deprived of the consolations of affording even temporary relief, while the patient in the greatest agony implores ~~for~~ assistance. It can not be said that this disease is absolutely incurable, I believe we can prove to the contrary, by some few cases.

I think with many that there are few diseases which can in their own nature be pronounced desperate, but properly speaking we are unacquainted with the medicines calculated for their cure.

Many patients have been dismissed by the most celebrated and experienced physicians as incurables, who have actually recovered merely by the efforts of unassisted nature and occasionally by

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When diseases are pronounced incurable, it immediately establishes indolence, and inattention. This diffidence of our knowledge and just sense of the present imperfect treatment of Hydrophobia, should incite us to improve it, not only from a love of the art itself, but from a principle of humanity.

The true meaning of the word Hydrophobia, is a fear or dread of water or other liquids, but what physicians wish to express by this term, though a very improper one, is a peculiar disease characterised by certain other symptoms, such as convulsions, great restlessness, a discharge of saliva &c. - and such is the disease I wish to describe. Hydrophobia then most commonly arises from the

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bite of rabid animals, more especially from the dog, and cat, as they are mostly domesticated and sometimes spontaneously.

This peculiar affection is arranged by Cullen, under the class neuroses, and order spasmi. He defines it "a loathing and great dread of drinking liquids from their creating a painful convulsion of the pharynx, occasioned most commonly by the bite of a mad animal."

Hydrophobia is divided into two species. When there is a desire of biting it is termed, Hydrophobia rabiosa, and when there is not a desire of biting Hydrophobia simplex.

With regard to spontaneous hydrophobia at the present period there can be little or no doubt, that all the symptoms indicating this disease may

appears in the human subject; exclusive of the bite of a rabid animal, we have many well attested cases by authors in proof of this opinion. among those are Drs Rush, Albert, and Orfila,

Dr Rush says it may arise from worms, sleeping all night in the open air, a wound in tendinous parts, great thirst, inflammation of the stomach, the bite of an angry, but not a diseased animal and several other causes. Dr Albert relates a case in his learned work on intermittents of a man from exposure to the night air, produced an intermittent, and the disease terminated with all the symptoms of hydrophobia.

I will in this place state a case of a boy aged sixteen years. who was attacked on the tenth of june. with

a slight fever, on the following day there was a great dread, and starting back at the sight, or even hearing water poured from one vessel into another, the convulsions violent, and very frequent, a wild fiery eye, considerable quantity of saliva from his mouth, opium was given freely but with no advantage, in the afternoon of the same day he expired in a convulsion, this boy stated that he had recieved no wound. neither did he recollect of ever having been bit by a dog, on dissection there was discovered an intus susceptio of part of the smaller intestines, but nothing farther unnatural could be perceived, a question may arise whether this intus susceptio was the cause or the effect of the disease.

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arises spontaneously it is to be treated according to the cause that produced it

Perhaps the only difference existing between the two is that the saliva from spontaneous hydrophobia is not capable of generating the disease, while that recieved by the bite of a rabid animal will produce it.

I shall confine myself principally to the disease arising from the bite of a rabid animals, as this is the most frequent occurrence. Canine madness is most frequent after long, hot and dry seasons, and such animals as live on putrid flesh, without a sufficiency of fresh water, are most liable to be affected with it. Writers in general say that this disease is of frequent occurrence in winter, this will not

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I have never seen, neither have I ever heard of such animals going mad at that season. I am inclined to believe that this disease most frequently originates in this state among wolves and foxes, we know that they consume a great quantity of animal flesh, especially carrion which they frequently find in our woods from the number of hogs that are destroyed there, those animals are run by our blood hounds particularly the fox and while it is pursued by the dogs they are encountered and bitten, those dogs after some indefinite time go mad and communicate the disease to others, and hence arises this affection. I believe any animal is capable of communicating the disease

after recieving it from the dog, wolf or fox. Dr Thomas observes there has not been a single instance of the disease being returned from the human species to the quadruped. Drs Mojendie and Breschet tried the experiment by introducing a portion of the saliva of a man while affected with the disease into two dogs, which controverts the opinion of Dr Thomas.

We have no proof that any of the secretions of a rabid animal but the saliva can produce hydrophobia, we have heard of persons drinking the milk of cows and even eating their flesh without the slightest inconvenience, neither will the scratch of the animal have any injurious effect. I was lately informed by a gentleman, that his

brother was considerably scratched by a cat that was mad. no inconvenience arose from it.

The length of time in which this disease appears after the reception of the injury varies considerably, from three weeks to several months, and perhaps years, the most usual period is about seven weeks. the longest period I ever heard of was seven months.

A lady in this place of unquestionable veracity informed me her sister was bitten by a mad dog in the month of september the wound healed and nothing occurred until the April following at which time she exerted herself very much in attempting to extinguish a fire of the woods near her dwelling. she was immediately

after attached with pains shooting up from the bitten part to the throat and expired three days after with all the symptoms of hydrophobia.

A number of persons have been bit by rabid animals without becoming affected. Mr Hunter relates an instance of twenty persons being bitten by the same dog and only one was seized with it. It appears obvious that different persons are not alike predisposed to be acted upon by the same contagion, and likewise that the predisposition to recieve contagion varies in the same person at different periods. The depressing passions, as well as other causes producing debility probably may predispose the system to the action of this virus.

It appears from the case I above related that there exists exciting causes. It seems the disease was excited by the exertion she used in extinguishing the fire.

The symptoms of madness in a dog should be well understood by every person, many disagreeable consequences may arise from neglecting this point. The life of the dog should be preserved until we could ascertain whether he was actually mad, because persons may be bit by dogs which they believe to be mad, but as they are generally killed immediately; it is impossible to ascertain whether they are actually so, and the minds of such persons are constantly kept in dread.

There are many circumstances which may induce people to believe a

dog mad without good foundation.

A dog loses his master, runs about in search of him. he is attacked by other dogs and perhaps by men, the creature thus frightened, abused and fatigued, looks wild and lolls out his tongue, and finding himself closely pursued takes every one he meets for an enemy and naturally attempts to bite him in self defence, and all declare him to have been mad, as it is afterwards impossible to prove otherwise.

I have witnessed such circumstances and I think it no way surprising that so many whimsical remedies have been so highly extolled for preventing the effects of the bite.

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the proud boasting ignorameeses which throng our country, administering their all infallible remedies? – no, it is in cases like these they promote their fame, while their too numerous dupes surrounding them, are almost ready to worship them as beings of another world.

It is in this way credulous people impose on themselves, and then deciere others. The same medicines which was supposed to prevent the effects of the bite when the dog was not mad, is recommended to a person who has had the misfortune to be bit by a dog that really was mad.

A case of this kind occurred a few months since, a man who was really bitten by a mad dog immediately applied to one of those

ignorant pretenders (an old woman) she assured him that by applying a piece of fat meat well covered with salt to the injured part, and perhaps blowing on the wound, and uttering a few words, that he would never sustain any injury from the bite, he assented to the proposal, trusted to the remedy and paid the forfeit of his credulity with his <u>life</u>.

It is to the credulity and ignorance of such people we are to attribute the frequent fatality of this disease, and not so much to the want of proper remedies, I am persuaded though not from actual experience, but from the nature of the case, and from the opinion of men capable of judging if proper medicines were

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administered in time and the bitten part destroyed immediately after the reception of the injury, not one in a hundred persons would be affected with the disease.

Symptoms. In man the symptoms generally attendant on this disease, when communicated by a rabid animal, are at some unknown period, and occasionally long after the bitten part seems quite well, a slight pain is felt in the wound, now and then attended with itching, but generally the pain resembles that of rheumatism, then come on wandering pains with an uneasiness and heaviness, disturbed sleep, agitation, subsultus tendinum and frightful dreams, sudden startings, frequent sighing

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and great anxiety, the patient is affected with deep melancholy for which he can discover no cause, and from which nothing can relieve him. These symptoms continuing daily to increase. he feels pains which extend from the bitten part along up to the chest and throat, at the latter place they appear to stop, attended with a straightness and sensation of choking, with a horror and dread of drinking liquids and a loss of appetite. The patient is however capable of swallowing any solid substance with tolerable ease but the moment a liquid is presented it occasions him to start back with horror. while at the same time he may be labouring under extreme thirst.

It is the opinion of some physicians that this peculiar aversion to liquids proceeds from the fear of swallowing them, owing to the diseased state of the parts concerned in that act, and not from actual dread of them; greater exertion is required in the act of swallowing liquids than in that of solids, and more pain and spasm is produced by the power of the muscles of deglutition.

A vomiting of bilious matter oftentimes comes on in the course of this disease, and an intense heat and fever ensues, attended with great thirst, dryness and roughness of the tongue; considerable hoarseness of the voice, a viscid discharge of saliva from the mouth, together with spasms of the

genital and urinary organs, in consequence of which the evacuations are forcibly ejected. respiration is laborious and hurried, but his judgement remains unaffected and answers questions correctly.

In some few instances great delirium occurs, and closes the tragic scene, but it more frequently happens that the pulse becomes unequal and intermittent, the convulsions are renewed with redoubled violence, a cold sweat covers the body, and nature, no longer able to contend, sinks under the weight of accumulated misery.

Hydrophobia, like all other diseases will vary in its symptoms in some degree, but not so much, that a practitioner need ever mistake it.

I deem it necessary in this place to state a case that occured in August eighteen hundred and twenty two, which afforded me an opportunity of witnessing the disease, in company with my preceptor Dr Abraham Deleon.

Case.. A miller aged about thirty years, spare made, and of melancholic temperament, on the evening of the fifteenth of june while returning home from his mill, considerably under the influence of ardent spirits, was encountered and bitten by a mad dog, he recieved the wound on his left hand between the ring and small finger, the teeth of the animal barely penetrated the cutis vera, on the following day he applied to an old woman in the neighbourhood, who advised an application of fat bacon

and salt, the wound did not heal as usual. but assumed a bluish purple colour, would alternately heal and fester and a reddish serosity would ooze from it, nothing else occurred for nearly seven weeks after the accident, he complained of soreness at the part bitten, a burning sensation of the stomach, with some soreness of the tongue, his appetite preternaturally increased, but complained of great debility.

For the purpose of concealing from his friends his wretched feelings he continued to attend his mill. until the first day of August, when he complained of pains shooting up from the wound and extending along the arm and whole of the left side, even in this wretched situation

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he tried to persuade himself, and his friends, that he was labouring under pleurisy, sixteen ounces of blood was taken from his arm by one of his neighbours, as he could not be prevailed upon to call in a physician, the bleeding appeared to produce no good effect, during the night he was very restless and watchful, he walked all night, and when confined expressed great desire to be running continually. On the following day he took a large dose of Glaubers salts, it operated well, but afforded no relief. in the afternoon of the same day he attempted to drink water but could not, owing I suppose to spasms of the throat.

The symptoms now becoming

too evident either to deceive himself or his friends he requested they should confine him, which was accordingly done, during the night he had a few light convulsions, the spasms of the throat increased, the breathing became quite difficult, the expression of his countenance, the uneasiness that appeared in all his person, the froth which came from his mouth added to the horror excited by liquids, too plainly showed this alarming disease.

On the succeeding day Dr Delon was called to his assistance all the symptoms were greatly increased, the pulse small and intermittent, the face flushed during the paroxysms, which returned every five minutes,

the eyes red and fierce; it was with the greatest difficulty he could breath, his judgement continued unimpaired, he would frequently implore the Doctor to relieve him, and as often would enquire about his wife and children, in this situation the agitation of the air or any considerable noise would renew the paroxysms, the violent spasmodic contractions of the abdominal muscles produced a hernia, there was also an obstinate priapism.

The Doctor immediately applied the vegetable caustic to the wound, the patient complained of pain during the application, at the same time there were persons employed in rubbing strong mercurial ointment on the inside of the thighs and neck

he was requested to close his eyes and open his mouth. he did so and a hundred drops of laudanum and ammonia was suddenly poured into his mouth, which he succeeded in swallowing.

A decoction of the alisma plantago was prepared, but he was incapable of taking any, it was likewise found impossible to administer any more laudanum in the same way, three hundred drops was therefore administered by injection, without any effect, the pulse became weaker and intermittent, the paroxysm in which he expired continued half an hour without the slightest remission and his death apparently occasioned, by the great quantity of saliva and mucous which filled the throat and nostrils, this occurred about two o'clock

in the afternoon.

Prognosis. As to the prognosis of this disease it can not be otherwise than unfavourable, as in most cases cures have been attempted in vain. It generally terminates in about four days from the first appearance of the symptoms.

Appearances, on Dissection. From the great difficulties we labour under in the southern states, as it respects the examination of dead bodies, I had not an opportunity of examining the body just spoken of, but what I can learn from authors there is generally an unusual aridity of the viscera, inflamatory appearance of the fauces, oesophagus and larynx, the stomach much distended with flatus and an accumulation or effusion of blood in the lungs, marks

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of inflamation have likewise occurred in the brain, consisting in a serous effusion on its surface, or a redness of the pia mater. In other cases of dissection, not the least morbid appearance has been observed in any part of the body.

Pathology. This I consider as one of the most important points, without a true knowledge of the nature and seat of the disease we must be left in doubt for the remedy, we are all aware how widely medical men differ in their opinions as it respects the pathology of this disease. It is believed by some physicians that the poison is taken up by the absorbents, and conveyed to the blood, which becomes contaminated, while others almost positively affirms that it is purely a local

affection arising from irritation, produced by the deposition of the poison, and by sympathy affecting the whole nervous system.

If it be an affection of the blood why does it commence at the part bitten and why are the shooting pains so similar to those produced by a diseased nerve? These are the most generally recieved opinions, whether either are correct will be left for future pathologists to determine.

Treatment. I shall in as brief a manner as possible, enumerate the medicines now most frequently employed, and some few that have maintained their ground to the present period, but why I am not able to say.

The treatment of hydrophobia

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naturally divides itself into such remedies as are proper to prevent the effects of the bite, and secondly such as are proper to cure the disease when formed.

The first remedy for the prevention of the disease, and one in which physicians universally agree to be the only certain mode is the extirpation of the bitten part, provided it can be done with safety, or if impracticable destroying the poison by caustic applications immediately after the reception of the injury, cutting out the part is supposed preferable and washing it clean with soap and water, then applying cupping glasses, aided by a free mercurial ptyalism, the wound should be kept discharging for six or eight weeks, should any

symptoms afterwards appear, an incision is immediately to be made at the same part, and the wound suffered to run for two or three months, to produce the effect irritating ointments are employed such as the Ung^t Lytae or savin ointment.

As a preventive the mercury alone has strong recommendations, many persons who have undergone its effects have been known to escape; while others who have neglected it, have become affected with the disease.

The sooner the wounded part is removed after the accident, the better, and I think it proper to extirpate the part even after weeks have elapsed, so as to give the patient every chance for escape.

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Dr Mead recommends the following plan for prevention, as one he has never known to fail. Take of ash coloured ground liver wort dried and powdered half an ounce, black pepper powdered fourth of an ounce mix them well together and divide into four portions, one to be taken every morning fasting in half a pint of cows milk warm, the patient must then go into the cold bath every morning for a month. his head to be kept above water, and he should not stay in longer than half a minute if the water be very cold, after this he must go in three times a week for a fortnight longer, he is to be bled before he commences this course.

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India specific or tonquin remedy, as it is called it consists of twenty four grains of native cinnabar, with as much factitious, made into a powder with sixteen grains of musk, to be taken in a teacupful of arrack or brandy, it is said to secure the patient for thirty days, at the expiration of which time should any symptoms appear it is to be repeated, but if symptoms show themselves immediately after taking the first portion it is to be repeated in three hours. The first to be taken immediately after the bite as possible.

It has been proposed to apply the liquor ammonia externally, as well as the internal exhibition of it.

Notwithstanding the various remedies which have been proposed

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and extolled as antidotes to this disease, the only one which we can confide in with safety is the excission or cauterization of the bitten part, with a liberal use of mercury.

As it respects the further treatment of this disease that is when it actually has made its appearance less unanimity prevails, some considering it a vascular and inflamatory, others a nervous and spasmodic disease; a difference must necessarily mark their method of cure.

Some for the removal of this disease almost exclusively depend on a mercurial ptyalism, while others speak in high terms of opium alone or combined with some other powerful antispasmodics, when administered in

large doses.

A third class place their reliance solely on the lancet as the chief enjine of cure. Arsenic has been used, and it is said efficaciously, this article certainly possesses great power in overcoming existing action in the system when given in sufficient doses, the carnatic pill which has long been celebrated in this disease is composed principally of arsenic.

Various other remedies have been proposed, and some used, among which are the Tinct cantharis, cuprum ammoniacum, hot and cold bath, olive oil, acetous acid &c.

These medicines although powerful in themselves, we believe

are incapable of arresting the disease when formed.

If I am ever so unfortunate as to be called in to a disease of this kind, I should be tempted to try the effects of blood letting, if the pulse would in any way permit, carried to a considerable extent, then the warm bath, after this I would attempt to give opium and calomel freely, carefully watching the effects of the medicines, if the patient be incapable of swallowing the opium, it should be thrown up by injections, cloths wet with laudanum should then be applied to the throat and abdomen. if these means should be attended with no good effect, I would make

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an artificial opening into the wind pipe, as proposed I think first by Doctor Physick, obviating by this operation the most fatal symptom and giving time for the effects of the medicines employed, should the patient recover from this attack, I would puct and keep him under a mercurial course for some time.